Journal of MOLECULAR BIOLOGY

EDITOR-IN-CHIEF
J. C. KENDREW

ASSISTANT EDITOR
S. BRENNER

EDITORIAL BOARD
R. L. Baldwin
M. S. Bretscher
C. R. Cantor
P. Chambon
J. Davies
G. A. Gilbert
M. Gottesman
R. Huber
A. Klug
S. Lowey
V. Luzzati
M. F. Moody
D. Nathans
C. C. Richardson
P. M. B. Walker
K. Weber
S. M. Weissman

VOLUME 120
25 March to 25 April 1978

ACADEMIC PRESS
London New York San Francisco

QH301
J73

Copyright © 1978, by Academic Press Inc. (London) Ltd.

ALL RIGHTS RESERVED

No part of this volume may be reproduced in any
form, by photostat, microfilm, or any other means,
without written permission from the publishers.

Printed in Great Britain

CONTENTS OF VOLUME 120

Number 1, 25 March 1978

Giphart-Gassler, M. and van de Putte, P., Early Gene Products of Bacteriophage Mu. Identification of the *B* Gene Product 1

Zain, B. S. and Roberts, R. J., Characterization and Sequence Analysis of a Recombination Site in the Hybrid Virus $Ad2^{+}ND_1$ 13

Blackburn, E. H. and Gall, J. G., A Tandemly Repeated Sequence at the Termini of the Extrachromosomal Ribosomal RNA Genes in *Tetrahymena* 33

Varmus, H. E., Heasley, S., Kung, H-J., Oppermann, H., Smith, V. C., Bishop, J. M. and Shank, P. R., Kinetics of Synthesis, Structure and Purification of Avian Sarcoma Virus-specific DNA Made in the Cytoplasm of Acutely Infected Cells 55

Wrede, P., Pongs, O. and Erdmann, V. A., Binding Oligonucleotides to *Escherichia coli* and *Bacillus stearothermophilus* 5 S RNA . . . 83

Garnier, J., Osguthorpe, D. J. and Robson, B., Analysis of the Accuracy and Implications of Simple Methods for Predicting the Secondary Structure of Globular Proteins 97

Appendix: Assessment of the Accuracy of Predictions 118

Koller, T., Kübler, O., Portmann, R. and Sogo, J. M., High Resolution Physical Mapping of Specific Binding Sites of *Escherichia coli* RNA Polymerase on the DNA of Bacteriophage T7 121

Letters to the Editor

Wright, C. E. and Laver, W. G., Preliminary Crystallographic Data for Influenza Virus Neuraminidase "Heads" 133

Bird, R. E. and Tomizawa, J., Ribonucleotide–Deoxyribonucleotide Linkages at the Origin of DNA Replication of Colicin E1 Plasmid 137

Number 2, 5 April 1978

Drlica, K. and Snyder, M., Superhelical *Escherichia coli* DNA: Relaxation by Coumermycin 145

Armstrong, I. L. and Tate, W. P., Requirement for the *Escherichia coli* Ribosomal Protein L11 in Peptide Chain Termination 155

Minke, R. and Blackwell, J., The Structure of α-Chitin 167

Reeve, J. N., Mertens, G. and Amann, E., Early Development of Bacteriophages SP01 and SP82G in Minicells of *Bacillus subtilis* . . . 183

Hassell, J. A., Lukanidin, E., Fey, G. and Sambrook, J., The Structure and Expression of Two Defective Adenovirus 2/Simian Virus 40 Hybrids . 209

Bijlenga, R. K. L., Ishii, T. and Tsugita, A., Complete Primary Structure of the Small Outer Capsid (soc) Protein of Bacteriophage T4 . . . 249

Bozzaro, S. and Gerisch, G., Contact Sites in Aggregating Cells of *Polysphondylium pallidum* 265

Strayer, D. R. and Boyer, P. D., Integrity of Parental DNA During Replication 281

Austin, S., Sternberg, N. and Yarmolinsky, M., Miniplasmids of Bacteriophage P1. I. Stringent Plasmid Replication does not Require Elements that Regulate the Lytic Cycle 297

Doolittle, R. F., Goldbaum, D. M. and Doolittle, L. R., Designation of Sequences Involved in the "Coiled-coil" Interdomainal Connections in Fibrinogen: Construction of an Atomic Scale Model 311

Letters to the Editor

Weber, E., Steigemann, W., Jones, T. A. and Huber, R., The Structure of Oxy-Erythrocruorin at 1·4 Å Resolution 327

Buehner, M. and Beato, M., Crystallization and Preliminary Crystallographic Data of Rabbit Uteroglobin 337

Erratum 343

Number 3, 15 April 1978

Petsko, G. A., Phillips, D. C., Williams, R. J. P. and Wilson, I. A., On the Protein Crystal Chemistry of Chloroplatinite Ions: General Principles and Interactions with Triose Phosphate Isomerase 345

Cooke, R. and Franks, K. E., Generation of Force by Single-headed Myosin . 361

Wiley, D. C. and Von Bonsdorff, C.-H., Three-dimensional Crystals of the Lipid-enveloped Semliki Forest Virus 375

Marcu, K. B., Schibler, U. and Perry, R. P., The 5′-terminal Sequences of Immunoglobulin Messenger RNAs of a Mouse Myeloma . . . 381

Tapper, D. P. and DePamphilis, M. L., Discontinuous DNA Replication: Accumulation of Simian Virus 40 DNA at Specific Stages in its Replication 401

Ben-Ishai, R. and Sharon, R., Patch Size and Base Composition of Ultraviolet Light-induced Repair Synthesis in Toluenized *Escherichia coli* . 423

Doniger, J., DNA Replication in Ultraviolet Light Irradiated Chinese Hamster Cells: The Nature of Replicon Inhibition and Post-replication Repair . 433

Letter to the Editor

Aschaffenburg, R., Phillips, D. C., Sutton, B. J., Baldwin, G., Kiener, P. A. and Waley, S. G., Preliminary Crystallographic Data for β-Lactamase I from *Bacillus cereus* 569 447

Number 4, 25 April 1978

Imai, M. and Shigesada, K., Studies on the Altered Rho Factor in *nitA* Mutants of *Escherichia coli* Defective in Transcription Termination. I. Characterization and Quantitative Determination of Rho in Cell Extracts . . 451

Shigesada, K. and Imai, M., Studies on the Altered Rho Factor in *nitA* Mutants of *Escherichia coli* Defective in Transcription Termination. II. Purification and Molecular Properties of the Mutant Rho 467

Levis, R. and Penman, S., 5′-Terminal Structures of Poly(A)$^+$ Cytoplasmic Messenger RNA and of Poly(A)$^+$ and Poly(A)$^-$ Heterogeneous Nuclear RNA of Cells of the Dipteran *Drosophila melanogaster* 487

Clarke, L. and Carbon, J., Functional Expression of Cloned Yeast DNA in *Escherichia coli:* Specific Complementation of Argininosuccinate Lyase (*arg*H)Mutations 517

Ishii, T., Yamaguchi, Y. and Yanagida, M., Binding of the Structural Protein Soc to the Head Shell of Bacteriophage T4 533

Letter to the Editor

Parry, D. A. D., Fibrogen: A Preliminary Analysis of the Amino Acid Sequences of the Portions of the α, β and γ-Chains Postulated to Form the Interdomainal Link Between Globular Regions of the Molecule . 545

Announcements 553

Index to Volume 120

Adenovirus 2/SV40 hybrids, defective, two, structure and expression, 209
Ad2^{+}ND$_{1}$ (see also Virus), 13
Aggregating cells of *Polysphondylium pallidum*, contact sites, 265
Amann, E. (see also Reeve, J. N.), 183
Amino acid sequences of the portions of the α, β and γ-chains postulated to form the interdomainal link between globular regions of the fibrinogen molecule, a preliminary analysis, 545
Argininosuccinate lyase (*arg*H) mutations, specific complementation; functional expression of cloned yeast DNA in *Escherichia coli*, 517
Armstrong, I. L. & Tate, W. P., Requirement for the *Escherichia coli* ribosomal protein L11 in petide chain termination, 155
Aschaffenburg, R., Phillips, D. C., Sutton, B. J., Baldwin, G., Kiener, P. A. & Waley, S. G., Preliminary crystallographic data for β-lactamase I from *Bacillus cereus* 569, 447
Austin, S., Sternberg, N. & Yarmolinsky, M., Miniplasmids of bacteriophage P1. I. Stringent plasmid replication does not require elements that regulate the lytic cycle, 297
Avian sarcoma virus-specific DNA made in the cytoplasm of acutely infected cells, kinetics of synthesis, structure and purification, 55

B gene product identification; early gene products of bacteriophage Mu, 1
Bacillus cereus 569, preliminary crystallographic data for β-lactamase I, 447
— *stearothermophilus* and *Escherichia coli* 5 S RNA, binding of oligonucleotides, 83
— *subtilis* minicells, early development of bacteriophages SP01 and SP82G, 183
Bacteriophage Mu, early gene products; identification of the *B* gene product, 1
— P1 miniplamids: stringent plasmid replication does not require elements that regulate the the lytic cycle, 297
— SP01 and SP82G, early development in minicells of *Bacillus subtilis*, 183
— T4, binding of the structural protein soc to the head shell, 533
— —, complete primary structure of the small outer capsid (soc) protein, 249
— — DNA, high resolution physical mapping of specific binding sites of *Escherichia coli* RNA polymerase, 121
Baldwin, G. (see also Aschaffenburg, R.), 447
Beato, M. (see also Buehner, M.) 337
Ben-Ishai, R. & Sharon, R., Patch size and base composition of ultraviolet light-induced repair synthesis in toluenized *Escherichia coli*, 423
Bijlenga, R. K. L., Ishii, T. & Tsugita, A., Complete primary structure of the small outer capsid (soc) protein of bacteriophage T4, 249
Binding oligonucleotides to *Escherichia coli* and *Bacillus stearothermophilus* 5 S RNA, 83
— sites, specific, of *Escherichia coli* RNA polymerase on the DNA of bacteriophage, high resolution physical mapping, 121
— of the structural protein soc to the head shell of bacteriophage T4, 533
Bird, R. E. & Tomizawa, J., Ribonucleotide-deoxyribonucleotide linkages at the origin of DNA replication of colicin E1 plasmid, 137
Bishop, J. M. (see also Varmus, H. E.), 55
Blackburn, E. H. & Gall, J. G., A tandemly repeated sequence at the termini of the extrachromosomal ribosomal RNA genes in *Tetrahymena*, 33
Blackwell, J. (see also Minke, R.), 167
Boyer, P. D. (see also Strayer, D. R.), 281
Bozzaro, S. & Gerisch, G., Contact sites in aggregating cells of *Polysphondylium pallidum*, 265
Buehner, M. & Beato, M., Crystallization and preliminary crystallographic data of rabbit uteroglobin, 337

Capsid, small outer, (soc) protein of bacteriophage T4, complete primary structure, 249
Carbon, J. (see also Clarke, L.), 517
α-, β- and γ-Chains, a preliminary analysis of the amino acid sequences of those portions postulated to form the interdomainal link between globular regions of the fibrinogen molecule, 545
Chinese hamster, DNA replication in ultraviolet light irradiated cells: the nature of replicon inhibition and post-replication repair, 433
α-Chitin structure, 167

Chloroplatinite ions, protein crystal chemistry: general principles and interactions with triose phosphate isomerase, 345
Clarke, L. & Carbon, J., Functional expression of cloned yeast DNA in *Escherichia coli:* specific complementation of argininosuccinate lyase (*arg*H) mutations, 517
Cloned yeast DNA expression in *Escherichia coli:* specific complementation of argininosuccinate lyase (*arg*H) mutations, 517
"Coiled-coil" interdomainal connections in fibrinogen, designation of sequences involved; construction of an atomic scale model, 311
Colicin E1 plasmid, ribonucleotide-deoxyribonucleotide linkages at the origin of DNA replication, 137
Contact sites in aggregating cells of *Polysphondylium pallidum*, 265
Cooke, R. & Franks, K. E., Generation of force by single-headed myosin, 361
Coumermycin and chromosome relaxatin; superhelical *Escherichia coli* DNA, 145
Crystal protein chemistry of chloroplatinite ions: general principles and interactions with triose phosphate isomerase, 345
Crystals, three-dimensional, of the lipid-enveloped Semliki Forest virus, 375
Crystallization and preliminary crystallographic data of rabbit uteroglobin, 337
Crystallographic data, preliminary, for influenza virus neuraminidase "heads", 133
— —, —, — β-lactamase I from *Bacillus cereus* 569, 447
Cytoplasmic avian sarcoma virus-specific DNA made in acutely infected cells, kinetics of synthesis, structure and purificaton, 55
— mRNA, poly(A)$^+$, and poly(A)$^+$ and poly(A)$^-$ heterogeneous nuclear RNA of cells of *Drosophila melanogaster*, 5′-terminal structures, 487

DNA, avian sarcoma virus-specific, made in the cytoplasm of acutely infected cells, kinetics of synthesis, structure and purification, 55
— of bacteriophage T7, high resolution physical mapping of specific binding sites of *Escherichia coli* RNA polymerase, 121
—, parental, integrity during replication, 281
DNA replication, discontinous; accumulation of Simian virus 40 DNA at specific stages in its replication, 401
— — in ultraviolet light irradiated Chinese hamster cells: the nature of replicon inhibition and post-replication repair, 433
— — of colicin E1 plasmid, ribonucleotide-deoxyribonucleotide linkages at the origin, 137
—, superhelical, of *Escherichia coli;* relaxation by coumermycin, 145
—, yeast, cloned, expression in *Escherichia coli:* specific complementation of argininosuccinate lyase (*arg*H) mutations, 517
Deoxyribonucleotide–ribonucleotide linkages at the origin of DNA replication of colicin E1 plasmid, 137
Depamphilis, M. L. (see also Tapper, D. P.), 401
Doniger, J., DNA replication in ultraviolet light irradiated Chinese hamster cells: the nature of replicon inhibition and post-replication repair, 433
Doolittle, L. R. (see also Doolittle, R. F.), 311
Doolittle, R. F.. Goldbaum, D. M. & Doolittle, L. R., Designation of sequences involved in the "coiled-coil" interdomainal connections in fibrinogen: construction of an atomic scale model, 311
Drlica, K. & Snyder, M., Superhelical *Escherichia coli* DNA: relaxation by coumermycin, 145
Drosophila melanogaster cells, 5′-terminal structures of poly(A)$^+$ cytoplasmic mRNA and of poly(A)$^+$ and poly(A)$^-$ heterogeneous nuclear RNA, 487

Erdmann, V. A. (see also Wrede, P.), 83
Escherichia coli and *Bacillus stearothermophilus* 5 S RNA, binding of oligonucleotides, 83
— — DNA, superhelical; relaxation by coumermycin, 145
— —, functional expression of cloned yeast DNA: specific complementation of argininosuccinate lyase (*arg*H) mutations, 517
— — ribosomal protein L11, requirement in peptide chain termination, 155
— — RNA polymerase binding sites on the DNA of bacteriophage T7, high resolution physical mapping, 121
— —, studies on the altered rho factor in *nitaA* mutants defective in transcription termination: characterization and quantitative determination of rho in cell extracts, 451
— —, — — — — — — — — — — — — — —: purification and molecular properties of the mutant rho, 467
— —, toluenized, patch size and base composition of ultraviolet light-induced repair synthesis, 423

Expression, functional, of cloned yeast DNA in *Escherichia coli:* specific complementation of argininosuccinate lyase (*arg*H) mutations, 517

Fey, G. (see also Hassell, J. A.), 209
Fibrinogen, designation of sequences involved in the "'coiled-coil" interdomainal connections; construction of an atomic scale model, 311
—: a preliminary analysis of the amino acid sequences of the portions of the α, β and γ-chains postulated to form the interdomainal link between globular regions of the molecule, 545
Force generation by single-headed myosin, 361
Franks, K. E. (see also Cooke, R.), 361

Gall, J. G. (see also Blackburn, E. H.), 33
Garnier, J., Osguthorpe, D. J. & Robson, B., Analysis of the accuracy and implications of simple methods for predicting the secondary structure of globular proteins, 97
Gene products, early, of bacteriophage Mu; identification of the *B* gene product, 1
Genes, extrachromosomal, for ribosomal RNA in *Tetrahymena*, a tandemly repeated sequence at the termini, 33
Gerisch, G. (see also Bozzaro, S.), 265
Giphart-Gassler, M. & van de Putte, P., Early gene products of bacteriophage Mu. Identification of the *B* gene product, 1
Globular proteins, analysis of the accuracy and implications of simple methods for predicting their secondary structure, 97
Goldbaum, D. M. (see also Doolittle, R. F.), 311

Hamster, Chinese, DNA replication in ultraviolet light irradiated cells: the nature of replicon inhibition and post-replication repair, 433
Hassell, J. A., Lukanidin, E., Fey, G. & Sambrook, J., The structure and expression of two defective adenovirus 2/Simian virus 40 hybrids, 209
Head shell of bacteriophage T4, binding of the structural protein soc, 533
"Heads" of neuraminidase from influenza virus, preliminary crystallographic data, 133
Heasley, S. (see also Varmus, H. E.), 55
Huber, R. (see also Weber, E.), 327
Hybrid virus $Ad2^{+}ND_1$, characterization and sequence analysis of a recombination site, 13
Hybrids, adenovirus 2/SV40, defective, two, structure and expression, 209

Imai, M. & Shigesada, K., Studies on the altered rho factor in *nitA* mutants of *Escherichia coli* defective in transcription termination. I. Characterization and quantitative determination of rho in cell extracts, 451
— (see also Shigesada, K.), 467
Immunoglobulin mRNAs of a mouse myeloma, the 5′-terminal sequences, 381
Influenza virus neuraminidase "heads", preliminary crystallographic data, 133
Integrity of parental DNA during replication, 281
Ishii, T., Yamaguchi, Y. & Yanagida, M., Binding of the structural protein soc to the head shell of bacteriophage T4, 533
— (see also Bijlenga, R. K. L.), 249

Jones, T. A. (see also Weber, E.), 327

Kiener, P. A. (see also Aschaffenburg, R.), 447
Kinetics of synthesis, structure and purification of avian sarcoma virus-specific DNA made in the cytoplasm of acutely infected cells, 55
Koller, T., Kübler, O., Portmann, R. & Sogo, J. M., High resolution physical mapping of specific binding sites of *Escherichia coli* RNA polymerase on the DNA of bacteriophage T7, 121
Kübler, O. (see also Koller, T.), 121
Kung, H-J. (see also Varmus, H. E.), 55

L11 protein, ribosomal, of *Escherichia coli*, requirement in peptide chain termination, 155
β-Lactamase I from *Bacillus cereus* I, preliminary crystallographic data, 447
Laver, W. G. (see also Wright, C. E.), 133
Levis, R. & Penman, S., 5′-Terminal structures of poly(A)$^{+}$ cytoplasmic mRNA and of poly(A)$^{+}$ and poly(A)$^{-}$ heterogeneous nuclear RNA of cells of the dipteran *Drosophila melanogaster*, 487
Lipid-enveloped Semliki Forest virus, three-dimensional crystals, 375
Lukanidin, E. (see also Hassell, J. A.), 209

Lytic cycle regulation elements are not required in stringent plasmid replication; miniplasmids of bacteriophage P1, 297

Mapping, physical, high resolution, of specific binding sites of *Escherichia coli* RNA polymerase on the DNA of bacteriophage T7, 121
Marcu, K. B., Schibler, U. & Perry, R. P., The 5′-terminal sequences of immunoglobulin messenger RNAs of a mouse myeloma, 381
Mertens, G. (see also Reeve, J. N.), 183
Messenger RNA, cytoplasmic, poly(A)$^+$, and poly(A)$^+$ and poly(A)$^-$ heterogeneous nuclear RNA of cells of *Drosophila melanogaster*, 5′-terminal structures, 487
— RNAs, immunoglobulin, of a mouse myeloma, the 5′-terminal sequences, 381
Miniplasmids of bacteriophage P1: stringent plasmid replication does not require elements that regulate the lytic cycle, 291
Minke, R. & Blackwell, J., The structure of α-chitin, 167
Mouse myeloma, the 5′-terminal sequences of immunoglobulin mRNAs, 381
Mu (see also Bacteriophage), 1
Mutants, *nitA*, of *Escherichia coli* defective in transcription termination, studies on the altered rho factor: characterization and quantitative determination of rho in cell extracts, 451
—, —, — — — — — — — —, — — — — — — —: purification and molecular properties of the mutant rho, 467
Mutations, argininosuccinate lyase (*arg*H), specific complementation; functional expression of cloned yeast DNA in *Escherichia coli*, 517
Myeloma, mouse, the 5′-terminal sequences of immunoglobulin mRNAs, 381
Myosin, single-headed, force generation, 361

Neuraminidase "heads" from influenza virus, preliminary crystallographic data, 133
nitA mutants of *Escherichia coli* defective in transcription termination; studies on the altered rho factor: characterization and quantitative determination of rho in cell extracts, 451
— — — — — — — — — — —, — — — — — — —: purification and molecular properties of the mutant rho, 467
Nuclear RNA, heterogeneous, poly(A)$^+$ and poly(A)$^-$ cytoplasmic mRNA of cells of *Drosophila melanogaster*, 5′-terminal structures, 487

Oligonucleotide binding to *Escherichia coli* and *Bacillus strearothermophilus* 5 S RNA, 83
Oppermann, H. (see also Varmus, H. E.), 55
Osguthorpe, D. J. (see also Garnier, J.), 97
Oxy-erythrocruorin, structure at 1·4 Å resolution, 327

P1 (see also Bacteriophage), 297
Parental DNA, integrity during replication, 281
Parry, D. A. D., Fibrogen: a preliminary analysis of the amino acid sequences of the portions of the α, β and γ-chains postulated to form the interdomainal link between globular regions of the molecule, 545
Patch size and base composition of ultraviolet light-induced repair synthesis in toluenized *Escherichia coli*, 423
Penman, S. (see also Levis, R.), 487
Peptide chain termination and *Escherichia coli* ribosomal protein L11, 155
Perry, R. P. (see also Marcu, K. B.), 381
Petsko, G. A., Phillips, D. C., Williams, R. J. P. & Wilson, I. A., On the protein crystal chemistry of chloroplatinite ions: general principles and interactions with triose phosphate isomerase, 345
Phillips, D. C. (see also Aschaffenburg, R.), 447
— (see also Petsko, G. A.), 345
Plasmid, colicin E1, ribonucleotide-deoxyribonucleotide linkages at the origin of DNA replication, 137
— replication, stringent, does not require elements that regulate the lytic cycle; miniplasmids of bacteriophage, P1, 297
Poly(A)$^+$ cytoplasmic mRNA and poly(A)$^+$ and poly(A)$^-$ heterogeneous nuclear RNA of cells of *Drosophila melanogaster*, 5′-terminal structures, 487
Polymerase for RNA from *Escherichia coli*, high resolution physical mapping of specific binding sites on the DNA of bacteriophage T7, 121

Polysphondylium pallidum, contact sites in aggregating cells, 265
Pongs, D. (see also Wrede, P.), 83
Portmann, R. (see also Koller, T.), 121
Protein crystal chemistry of chloroplatinite ions: general principles and interactions with triose phosphate isomerase, 345
— L11, ribosomal, of *Escherichia coli*, requirement in peptide chain termination, 155
— soc, structural, binding to the head shell of bacteriophage T4, 533
Proteins, globular, analysis of the accuracy and implications of simple methods for predicting their secondary structure, 97

Rabbit uteroglobin, crystallization and preliminary crystallographic data, 337
Recombination site in the hybird virus $Ad2^{+}ND_1$, characterization and sequence analysis, 13
Reeve, J. N., Mertens, G. & Amann, E., Early development of bacteriophage SP01 and SP82G in minicells of *Bacillus subtilis*, 183
Relaxation by coumermycin: superhelical *Escherichia coli* DNA, 145
Repair, post-replication, and replicon inhibition; DNA replication in ultraviolet light irradiated Chinese hamster cells, 433
— synthesis, ultraviolet light-induced, in toluenized *Escherichia coli*, patch size and base composition, 423
Replication, discontinuous, of DNA; accumulation of Simian virus 40 DNA at specific stages in its replication, 401
—, DNA, of colicin E1 plasmid, ribonucleotide–deoxyribonucleotide linkages at the origin, 137
— of DNA in ultraviolet light irradiated Chinese hamster cells: the nature of replicon inhibition and post-replication repair, 433
— and the integrity of parental DNA, 281
—, plasmid, stringent, does not require elements that regulate the lytic cycle; miniplasmids of bacteriophage P1, 297
RNA, messenger, cytoplasmic, poly(A)$^{+}$, and poly(A)$^{+}$ and poly(A)$^{-}$ heterogeneous nuclear RNA of cells of *Drosophila melanogaster*, 5′-terminal structures, 487
—, polymerase from *Escherichia coli*, high resolution physical mapping of specific binding sites on the DNA of bacteriophage T7, 121
—, ribosomal, in *Tetrahymena*, a tandemly repeated sequence at the termini of the extrachromosomal genes, 33
—, 5 S, of *Escherichia coli* and *Bacillus stearothermophilus*, binding of oligonucleotides, 83
RNAs, messenger, immunoglobulin, of a mouse myeloma, the 5′-terminal sequences, 381
Ribonucleotide-deoxyribonucleotide linkages at the origin of DNA replication of colicin E1 plasmid, 137
Ribosomal protein L11 of *Escherichia coli*, requirement in peptide chain termination, 155
— RNA genes, extrachromosomal, in *Tetrahymena*, a tandemly repeated sequence at the termini, 33
Roberts, R. J. (see also Zain, B. S.), 13
Robson, B. (see also Garnier, J.), 97
Rho factor, altered, in *nitA* mutants of *Escherichia coli* defective in transcription termination: characterization and quantitative determination of rho in cell extracts, 451
— —, —, — — — — — — — — — —: purification and molecular properties of the mutant rho, 467

Sambrook, J. (see also Hassell, J. A.), 209
Schibler, U. (see also Marcu, K. B.), 381
Semliki Forest virus, lipid-enveloped, three-dimensional crystals, 375
Sequence analysis and characterization of a recombination site in the hybrid virus $Ad2^{+}ND_1$, 13
—, tandemly repeated, at the termini of the extrachromosomal ribosomal RNA genes in *Tetrahymena*, 33
Sequences, amino acid, of the portions of the α, β and γ-chains postulated to form the interdomainal link between globular regions of the fibrinogen molecule, a preliminary analysis, 545
— involved in the "coiled-coil" interdomainal connections in fibrinogen: construction of an atomic scale model, 311
Sequences, 5′-terminal, of immunoglobulin messenger RNAs of a mouse myeloma, 381
Shank, P. R. (see also Varmus, H. E.), 55
Sharon, R. (see also Ben-Ishai, R.), 423

Shigesada, K. & Imai, M., Studies on the altered rho factor in *nitA* mutants of *Escherichia coli* defective in transcription termination. II. Purification and molecular properties of the mutant rho, 467
— (see also Imai, M.), 451
Simian virus 40/adenovirus 2 hybrids, defective, two, structure and expression, 209
— — 40 DNA, accumulation at specific stages in its replication; discontinuous DNA replication, 401
Smith, V. C. (see also Varmus, H. E.), 55
Snyder, M. (see also Drlica, K.), 145
Soc protein of small outer capsid of bacteriophage T4, complete primary structure, 249
— —, structural, binding to the head shell of bacteriophage T4, 533
Sogo, J. M. (see also Koller, T.), 121
SP01 (see also Bacteriophage), 183
SP82G (see also Bacteriophage), 183
Sternberg, N. (see also Austin, S.), 297
Strayer, D. R. & Boyer, P. D., Integrity of parental DNA during replication, 281
Structure and expression of two defective adenovirus 2/Simian virus 40 hybrids, 209
Structure of α-chitin, 167
— — oxy-erythrocruorin at 1·4 Å resolution, 327
—, primary, complete, of the smaller outer capsid (soc) protein of bacteriophage T4, 249
—, purification and kinetics of synthesis of avian sarcoma virus-specific DNA made in the cytoplasm of acutely infected cells, 55
—, secondary, of globular proteins, analysis of the accuracy and implications of simple prediction methods, 97
Structures, 5′-terminal, of poly(A)$^+$ cytoplasmic mRNA and of poly(A)$^+$ and poly(A)$^-$ heterogeneous nuclear RNA of cells of *Drosophila melanogaster*, 487
Superhelical *Escherichia coli* DNA: relaxation by coumermycin, 145
Sutton, B. J. (see also Aschaffenburg, R.), 447

T4 (see also Bacteriophage), 249, 533
T7 (see also Bacteriophage), 121
Tapper, D. P. & DePamphilis, M. L., Discontinuous DNA replication: accumulation of Simian virus 40 DNA at specific stages in its replication, 401
Tate, W. P. (see also Armstrong, A. L.), 155
Tetrahymena, a tandemly repeated sequence at the termini of the extrachromosomal ribosomal RNA genes, 33
Toluenized *Escherichia coli*, patch size and base composition of ultraviolet light induced repair synthesis, 423
Tomizawa, J. (see also Bird, R. E.), 137
Transcription termination-defective *nitA* mutants of *Escherichia coli*, studies on the altered rho factor: characterization and quantitative determination of rho in cell extracts, 451
Transcription termination-defective *nitA* mutants of *Escherichia coli*, studies on the altered rho factor: purification and molecular properties of the mutant rho, 467
Triose phosphate isomerase, interaction with chloroplatinite ions; general principles of protein crystal chemistry of chloroplatinite ions, 345
Tsugita, A. (see also Bijlenga, R. K. L.), 249

Ultraviolet light-induced repair synthesis in toluenized *Escherichia coli*, patch size and base composition, 423
Ultraviolet light irradiated Chinese hamster cells, DNA replication: the nature of replicon inhibition and post-replication repair, 433
Uteroglobin, rabbit, crystallization and preliminary crystallographic data, 337

Van de Putte, P. (see also Giphart-Gassler, M.), 1
Varmus, H. E., Heasley, S., Kung, H-J., Oppermann, H., Smith, V. C., Bishop, J. M. & Shank, P. R., Kinetics of synthesis, structure and purification of avian sarcoma virus-specific DNA made in the cytoplasm of acutely infected cells, 55
Virus Ad2$^+$ND$_1$, hybrid, characterization and sequence analysis of a recombination site, 13
—, avian sarcoma, -specific DNA made in the cytoplasm of acutely infected cells, kinetics of synthesis, structure and purification, 55
— hybrids, adenovirus 2/SV40, defective, two, structure and expression, 209
—, influenza, preliminary crystallographic data for neuraminidase "heads", 133
—, Semliki Forest, lipid-enveloped, three-dimensional crystals, 375

—, SV40, accumulation of DNA at specific stages in its replication; discontinuous DNA replication, 401
Von Bonsdorff, C.-H. (see also Wiley, D. C.), 375

Waley, S. G. (see also Aschaffenburg, R.), 447
Weber, E., Steigemann, W., Jones, T. A., & Huber, R., The structure of oxy-erythrocruorin at 1·4 Å resolution, 327
Wiley, D. C. & Von Bonsdorff, C.-H., Three-dimensional crystals of the lipid-enveloped Semliki Forest virus, 375
Williams, R. J. P. (see also Petsko, G. A.), 345
Wilson, I. A. (see also Petsko, G. A.), 345
Wrede, P., Pongs, O. & Erdmann, V. A., Binding oligonucleotides to *Escherichia coli* and *Bacillus stearothermophilus* 5 S RNA, 83
Wright, C. E. & Laver, W. G., Preliminary crystallographic data for influenza virus neuraminidase "heads", 133

Yamaguchi, Y. (see also Ishii, T.), 533
Yanagida, M. (see also Ishii, T.), 533
Yarmolinsky, M. (see also Austin, S.), 297
Yeast DNA, cloned, expression in *Escherichia coli:* specific complementation of argininosuccinate lyase (*arg*H) mutations, 517

Zain, B. S. & Roberts, R. J., Characterization and sequence analysis of a recombination site in the hybrid virus $Ad2^{+}ND_{1}$, 13